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	TRANSMITTAL FORM		
	Application Number	10/736,387	
	Filing Date	December 15, 2003	
	First Named Inventor	GODBOLE, Sanjay P., et al.	
	Art Unit	1626	
	Examiner Name	Ebenezer O. Sackey	
Number of Pages in This Submission	36	Attorney Docket Number	39,041-00

ENCLOSURES (Check all that apply)

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| <input checked="" type="checkbox"/> Fee Transmittal Form
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<input type="checkbox"/> Amendment/Reply
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<input type="checkbox"/> Status Letter
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Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	INEOS USA LLC		
Signature	<i>David P. Yusko</i>		
Printed name	DAVID P. YUSKO		
Date	April 3, 2007	Reg. No.	30,817

CERTIFICATE OF TRANSMISSION/MAILING

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Typed or printed name	Teddi Triggs	Date	Apr. 3, 2007

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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FEE TRANSMITTAL
For FY 2007☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 500.00

Complete if Known

Application Number	10/736,387
Filing Date	December 15, 2003
First Named Inventor	GODBOLE, Sanjay, et al.
Examiner Name	Ebenezer O. Sackey
Art Unit	1626
Attorney Docket No.	39,041-00

METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

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FEE CALCULATION**1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee (\$)	Small Entity Fee (\$)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	200	100
Multiple dependent claims	360	180

Total Claims	Extra Claims	Fee (\$)	Fee Paid (\$)	Multiple Dependent Claims	Fee (\$)	Fee Paid (\$)
- 20 or HP =	x	=				

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims	Extra Claims	Fee (\$)	Fee Paid (\$)
- 3 or HP =	x	=	

HP = highest number of independent claims paid for, if greater than 3.

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
- 100 =	/ 50 =	(round up to a whole number) x	=	

4. OTHER FEE(S)

Non-English Specification, \$130 fee (no small entity discount)

Other (e.g., late filing surcharge): APPEAL BRIEF

Fees Paid (\$)

\$500.00

SUBMITTED BY

Signature	<u>David P. Yusko</u>	Registration No. (Attorney/Agent) 30,817	Telephone 630 857 7151
Name (Print/Type)	David P. Yusko	Date <u>April 3, 2007</u>	

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Atty. Docket No. 39,041
Appln. No. 10/736,378



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellants: Sanjay P. GODBOLE
Mark C. CESA

Serial No.: 10/736,387

Filing Date: 15 December 2003

Title: PROCESS FOR RECOVERING
ACRYLONITRILE OR METHACRYLONITRILE

Group No.: 1626

Examiner:
Ebenezer O. Sackey

APPEAL BRIEF

Mail Stop APPEAL BRIEF-PATENTS

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

Appellants herewith file their Appeal Brief in the above-identified case under
37 CFR § 41.37, pursuant to the Notice of Appeal filed February 14, 2007.

04/06/2007 HDESTA1 00000046 503573 10736387

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APRIL 3, 2007

TEDDI TRIGGS

APR 3, 2007 *Teddi Triggs*

Date

Signature

I. REAL PARTY IN INTEREST

The real party in interest is INEOS USA LLC, the assignee of the entire interest of the present application (as recorded at reel 018291, frame 0959).

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences with regard to the present application.

III. STATUS OF CLAIMS

Claims 1-7 are pending in the application. Claims 1-6 are rejected in the final Office Action mailed 15 September 2006. Claim 7 is objected but allowable if rewritten in independent form. The present Appeal is directed to Claims 1-6, as presented in Appendix A.

IV. STATUS OF AMENDMENTS

Appellants filed a Request for Reconsideration on February 14, 2007 in response to the final Office Action mailed on 15 September 2006. An Advisory Action has not been received prior to the filing of this brief.

V. SUMMARY OF CLAIMED SUBJECT MATTER

This present invention, as defined by independent Claim 1, is directed to a process for the manufacture/recovery of nitrile monomer selected from the group consisting of acrylonitrile and methacrylonitrile (Page 4, lines 9-10). The process comprises contacting a gaseous effluent comprising nitrile monomer from an ammoxidation reactor with an aqueous quench liquid in a first column (Page 4, lines 14-16). The gaseous quench effluent from said first column contacts with water in a second column, thereby forming an aqueous solution comprising nitrile monomer and coproducts (Page 4, lines 17-18). The aqueous solution is subjected to a water extractive distillation in a recovery distillation column employing solvent water and collecting said nitrile monomer together with water in an

overhead decanter (Page 4, lines 15-21). The pH of the contents of said distillation column is maintained in the range of from about 5.5 to about 7.5 by adding an alkaline compound (Page 4, lines 20-22). The alkaline compound is selected from the group consisting of ammonium carbonate, ammonium bicarbonate, ammonium carbamate, alkylene diamines, and mixtures thereof (page 5, lines 1-3).

VI. ISSUE TO BE REVIEWED ON APPEAL

The issue to be reviewed on appeal is the rejection of Claims 1-6 under 35 U.S.C. § 103(a) as obvious over U.S. Patent 6,793,776 ("Godbole") and U.S. Patent 3,896,007 ("Rescalli") in view of GB Patent 821,958 ("Cyanamid").

VII. ARGUMENTS

The *prima facie* requirements for a case of obviousness are three fold: 1) a motivation to combine the references, 2) an expectation of success for the combination, 3) disclosure of all limitations (*see* MPEP § 2143). The combination of Godbole, Rescalli and Cyanamid fail to meet any of the three requirements for a case of obviousness.

Appellants' claimed invention is a new process for recovering acrylonitrile or methacrylonitrile by water extractive distillation and maintaining substantially neutral pH by adding a sufficient amount of at least one alkaline compound selected from the ammonium carbonate, ammonium bicarbonate, ammonium carbamate, and alkylene diamines by addition to the overhead decanter (*see* Abstract). There are several benefits of Appellants' process including improved product recovery, reduced sodium levels in a waste water streams, and improved refractory life for waste incinerators. (*see* Page 3, line 3 to Page 4, line 4).

Godbole is cited as one of the two primary obviousness references to provide the process flow scheme including an ammoxidation reactor, a quench tower, an absorber tower, a recovery column, and a heads column. Godbole teaches a process for enhanced recovery and operations of hydrogen cyanide/heads column (*see* Abstract). The Examiner states in the Office Action on Page 5 that Godbole is silent on the pH issue and does not disclose the use of ammonium carbonate. Godbole is also silent on alkaline compounds,

caustic, basic, acidic, and buffering. Godbole does not seek to address the issue of pH control in any case whatsoever. Therefore, one skilled in the art of process engineering would not be motivated to combine Godbole with other references to arrive at Appellants' invention.

In order for a rejection under 35 U.S.C. § 103 to be proper, the cited references must be categorized by the appropriate sections of 35 U.S.C. § 102. Additionally, 35 U.S.C. § 103(c) states:

Subject matter developed by another person, which qualifies as prior art only under one or more of subsections (e), (f), and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the claimed invention was made, owned by the same person or subject to an **obligation of assignment** to the **same person**. (35 U.S.C. § 103(c), Conditions for patentability; non-obvious subject matter)

In this case, the Patent Application was filed on 15 December 2003 and claims priority to Provisional Patent Application 60/437,836, filed on 03 January 2003. The Patent Application is fully supported by the Provisional Patent Application (with identical claims and specification). Godbole issued on 21 September 2004 from an application filed on 31 August 2001. At the time the invention was made, the Patent Application and Godbole were commonly assigned to The Standard Oil Company.

Godbole cannot be applied as a reference under 35 U.S.C. § 103 against the Patent Application (*see* 35 U.S.C. § 103(c)). Since the issue date of Godbole is after the filing date of both the Patent Application and the Provisional Patent Application, Godbole is not prior art under 35 U.S.C. § 102(a) or 102(b). Furthermore, since there is a common assignee between the Patent Application and Godbole, 35 U.S.C. § 102(e) cannot be applied for an obviousness rejection according to 35 U.S.C. § 103(c), as cited above. Thus, this rejection is improper because Godbole is not a valid reference.

Rescalli is cited as the other primary reference to provide pH control during water extractive distillation (*see* Office Action, Page 5). Rescalli states that the additive may be introduced at any point in the cycle but does not disclose pH control using an alkaline

compound as claimed. Rescalli discloses either pH control with only acids (not Appellants' alkaline compound) or is at best unclear as to pH control.

Regarding the acrylonitrile recovery process, Rescalli states:

The first stage is composed essentially of two steps: in the first step there is the **removal of ammonia** (by hot scrubbing the reaction gases with water generally **acidified** with sulphuric acid) while in the 2nd step all inert gases are removed (by cold scrubbing with water). (column 1, lines 39-43)

Rescalli goes on to describe pH control as follows:

This is feasible by a suitable pH control of the waters circulating in the purification cycle constituted by the absorption column, extractive distillation column and column for the recovery of the waters. The pH value for the cycle waters **must be always higher than 5.5**; on the other hand the use of water having a pH higher than 7.5 should be avoided owing to the possibility both of ACN and HCN polymerizations and of secondary reactions of other kinds which are in any case dangerous to the column operation. (column 3, lines 4-13)

And Rescalli lists possible additives for pH control as including both acids and bases:

As additives use is made of alkaline or alkaline earth metal salts as for instance, sodium or calcium carbonate, phosphate or acetate and **acids** such as **acetic and phosphoric acids**. (column 3, lines 17-20)

Looking at Rescalli's FIG. 1 and noting the pH control feed:

The additive compound for maintaining the pH in the water cycle at the desired value **is fed through 16**. (column 4, lines 38-40)

Rescalli teaches pH control by addition to line 16 going to the acidified scrubbers (quench column) to affect a pH range of 5.5 to 7.5 in the downstream absorption column. One skilled in the art would choose acid pH additives since the line goes to the scrubber to neutralize excess ammonia (base). If a base is chosen then either additional sulphuric acid will be added in the scrubber and pH control in the downstream towers would still not be affected or undesirable ammonia break through would result and cause serious operational problems.

Assuming that Rescalli does actually teach a working pH control system (Appellants strongly object to this assumption), it teaches that the pH of the waters **must** always remain between 5.5 and 7.5 so putting the pH control in lines (16) to the upstream to the recovery column is expected. However, Appellants' addition point is the overhead decanter of the recovery column or the furthest downstream equipment from the point of first water contacting. Put another way, one skilled in the art and guided by the explicit teachings of Rescalli would not have an expectation of success when adding the pH control to the overhead decanter of the recovery column. Rescalli does not teach or suggest Appellants' pH control compounds.

Cyanamid is cited for pH adjustment using ammonium carbonate and states:

Adjustment of the pH may be readily made by the addition of any of various alkaline materials, such as the hydroxides, phosphates, borates and carbonates of the alkali and alkaline earth metals, and ammonia. Addition of the alkaline material may be conveniently made at any of various stages prior to stripping. Preferably, addition is made at the time of scrubbing of the reactor gas, but the alkaline material may also be directly added to the stripping column, or at any point between the scrubber and the stripping column. (Page 2, lines 43-62)

Again, the addition point being prior to stripping (recovery column) is not Appellants' downstream overhead decanter of the recovery column. The combination of Godbole, Rescalli, and Cyanamid do not teach or suggest Appellants' limitation of the addition point being the overhead decanter.

Appellants' process has an unexpected result of a buffered solution that is neither disclosed nor inherent in Cyanamid or the combination of cited references:

The acidity of a process stream from the quench column, and thereby the acidity of the aqueous solution can vary widely with time. Adding ammonium carbonate to the aqueous stream in the column will form a carbonate/bicarbonate mixture. The buffering ability of ammonium carbonate/bicarbonate mixtures serves to maintain the pH near neutral, whether a deviation in the process stream causes an increase or a decrease in the acid components. Thus, ammonia present in the process stream may be absorbed by the ammonium bicarbonate to form ammonium carbonate, avoiding the need to provide for the use of an acid additive. Moreover,

aqueous solutions of ammonium carbonate are only mildly alkaline; a modest excess of ammonium carbonate will be tolerated by the system without risk of product loss by alkalizing the column. (Page 6, lines 6-16)

Additional support for the buffering capabilities of Appellants' compounds is further shown in the examples of the Patent Application as demonstrated in particular by the lower numbers in the Acetic acid pH shift of the fifth column of Table 1 (*see* Page 7, table and text). Common alkaline additives such as soda ash or potassium hydroxide do not exhibit the claimed buffering characteristics. Applicants buffering compound is very advantageous since the buffering accommodates pH swings created by process fluctuations. Such fluctuations can be particularly problematic during changes in reactor feed rates as is common due to changes in ambient conditions. One skilled in the art would not expect that adding an alkaline material (low pH) for pH control would result in a solution that is able to handle excursions of lower pH such as ammonia break through. Therefore, this buffering is an unexpected result.

For at least these reasons (different reactants, different process, different process unit operations, different location for pH control, and different impurities being removed), Cyanamid clearly teaches a different process and is non-analogous art. One skilled in the art would not look to combine the teachings of Cyanamid with Godbole and Rescalli.

An additional point with respect to Claims 5 and 6, while Appellants believe that all claims of the instant application are patentable over the cited references, there are no suggestions or teachings in the cited references that ammonium carbonate can be generated in situ for pH control or that an alkylene diamine can be used for pH control. The combination of Godbole, Rescalli, and Cyanamid does not contain the words "in situ" or "amine." As such, claims 5 and 6 are clearly nonobvious and patentable over the cited references.

In summary, Appellants' invention is nonobvious over the combination of Godbole, Rescalli, and Cyanamid. Godbole is not a valid reference according to 35 U.S.C. § 103(c). Rescalli does not teach or suggest a working pH control system and the limitation of the buffering pH control addition to the overhead decanter of the recovery

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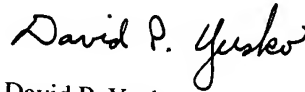
column is not disclosed. Therefore, none of the three requirements for a *prima facie* case of obviousness have been met.

VIII. CONCLUSION

For the above reasons, Appellants respectfully submit that the rejections posed by the Examiner are improper as a matter of law and fact. Accordingly, Appellants respectfully request the Board to reverse the rejections of Claims 1-6.

A check for the fee required by 37 CFR 41.37(a)(2) and 37 CFR 41.20(b)(2), updated pursuant to the Fiscal Year 2007 Fee Schedule, in the amount of \$500, is attached hereto. Please charge any additional amount owed or credit any overpayment, to Deposit Account 50-3573.

Respectfully submitted,



David P. Yusko
Registration No. 30,817

Date APR 12 3, 2007

Central Park of Lisle
4225 Naperville Road, Suite 600
Lisle, Illinois 60532
TEL (630) 857-7151
FAX (630) 857-7328

APPENDIX A – CLAIMS APPENDIX

1. (Rejected) A process for the manufacture of nitrile monomer selected from the group consisting of acrylonitrile and methacrylonitrile, said process comprising contacting a gaseous effluent comprising nitrile monomer from an ammoxidation reactor with an aqueous quench liquid in a first column; contacting the gaseous quench effluent from said first column with water in a second column, thereby forming an aqueous solution comprising nitrile monomer and coproducts; and subjecting said aqueous solution to a water extractive distillation in a recovery distillation column employing solvent water and collecting said nitrile monomer together with water in an overhead decanter wherein the pH of the contents of said distillation column is maintained in the range of from about 5.5 to about 7.5 by adding an alkaline compound, the improvement wherein said alkaline compound is selected from the group consisting of ammonium carbonate, ammonium bicarbonate, ammonium carbamate, alkylene diamines, and mixtures thereof.

2. (Rejected) The process of Claim 1, the improvement wherein said pH is maintained in the range of from about 6 to about 7.

3. (Rejected) The process of Claim 1, the improvement wherein said alkaline compound is ammonium carbonate.

4. (Rejected) The process of Claim 1, the improvement wherein said alkaline compound is a mixture comprising ammonium bicarbonate and ammonium carbamate.

5. (Rejected) The process of Claim 2, the improvement wherein said ammonium carbonate is generated in situ by adding ammonia and carbon dioxide to said solvent water.

6. (Rejected) The process of Claim 1, the improvement wherein said alkaline compound is an alkylene diamine.

7. (Objected) The process of Claim 1, the improvement wherein said alkaline compound is an alkylene diamine selected from the group consisting of ethylene diamine and an N,N,N',N'-tetraalkyl ethylene diamine.

APPENDIX B – EVIDENCE APPENDIX

No evidence is submitted pursuant to 37 C.F.R. §§ 1.130, 1.131 or 1.132.
Copies of the following evidence and prior art relied upon by the Examiner are attached.

Exhibit A: U.S. Patent U.S. Patent 6,793,776 (“Godbole”), entered in an Office Action dated 07 February 2006.

Exhibit B: U.S. Patent 3,896,007 (“Rescalli”), entered in an Office Action dated 07 February 2006.

Exhibit C: GB Patent 821958 (“Cyanamid”), entered in an Office Action dated 07 February 2006.

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EXHIBIT A

U.S. Patent 6,793,776 (“Godbole”), 6 pages.

Atty. Docket No. 39,041
Appln. No. 10/736,378

APPENDIX C – RELATED PROCEEDINGS APPENDIX

None.